

REMARKS

Headings are being added to the specification as requested by the Examiner. However, applicant would respectfully remind the Examiner that such headings are a matter of choice, not a requirement of the statute, rules or MPEP.

The drawing is believed to be correctly presented and described as it stands. When there is just a single figure of drawings, it has long been the practice of the Office not to give it a figure number and to refer to it as the drawing or the single figure. If the Examiner is aware of a change in that practice, he is authorized to add "Fig. 1" to the drawing and to amend the description of the drawing at Page 6, line 13 accordingly.

The rejection of Claims 3 and 4 as being unpatentable over the combination of Aoki et al. (U.S. 5,581,874) and Hubacek (U.S. 6,451,157) is not understood. Those claims are directed to a process for very fast etching of silicon or epoxy resins by a unique combination of processing steps and operating conditions which is not even remotely suggested by the references.

Aoki et al. pertains to a CVD process and apparatus, and is concerned primarily with the formation of an anticorrosive coating on aluminum surfaces for use in the processing chamber of a reactor. Although some cleaning may be involved, the emphasis is on the coating, and there is definitely no fast etching of silicon or epoxy resins as in applicant's invention.

Because of the different nature of the processes, the operating conditions in Aoki et al. are also quite different, and there is no basis whatsoever for the Examiner's suggestions that the showerhead may be less than 6mm from the pedestal and that the pressure inside the chamber may be maintained at a level greater than 1.5 Torr. Those suggestions are pure conjecture on the part of the Examiner, motivated solely by applicant's own disclosure and claims, and they are at least in part contrary to what Aoki et al. itself says the conditions should be. In that regard, applicant would note

that the chamber pressure in Aoki et al. is 10^{-6} Torr (Col. lines 34 - 38), which is six orders of magnitude lower than the pressure specified in Claim 3.

As discussed in applicant's disclosure (pages 10 - 11), the high pressure is an important part of the invention in reducing the energy of ions striking the substrate and preventing sputtering which would otherwise prevent the type of plasma discharge which is needed in order to produce the high etching rates.

Applicant is also puzzled by the Examiner's reliance on Hubacek as showing the use of a showerhead electrode. Apparently, he did not realize that the upper electrode 3 in Aoki et al. is a showerhead electrode and that Hubacek is merely cumulative in that regard. However, even with the showerhead electrode, Aoki et al. does not even come close to suggesting applicant's invention.

Claim 3 distinguishes initially over the references in that it is directed to a process for very fast etching of silicon or epoxy resins. It further distinguishes in calling for the steps of placing a wafer on a pedestal in a chamber, exhausting gas from the chamber through a pressure regulation valve, introducing a gas containing fluorine and/or oxygen into chamber through a showerhead electrode which is positioned substantially parallel to and less than 6 mm from the pedestal, applying RF power to the pedestal and/or the showerhead electrode, and maintaining the pressure inside the chamber at a level greater than 1.5 Torr. This combination is not even remotely suggested by the references, and it produces a result which is not even envisioned by them.

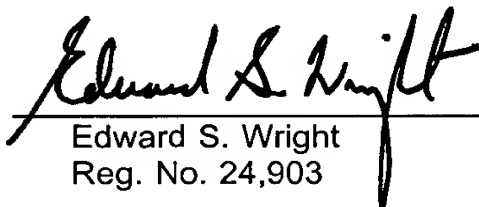
Claim 4 depends from Claim 3 and further distinguishes in specifying that the ratio of the RF power provided between the showerhead electrode and the pedestal to the gas pressure is greater than 1 Watt per cubic centimeter to each Torr of gas pressure. As the Examiner has acknowledged, this power density to pressure ratio is not taught by the references, and there is no basis whatsoever for the Examiner's suggestion that it is merely a matter of routine experimentation within the prior art. Combining the teachings of the references in the manner suggested by the Examiner

and then experimenting with power density to pressure ratios would not produce fast etching of silicon or epoxy resins, and it certainly would not lead to the ratio set forth in Claim 4.

With this clarification, applicant trusts that the Examiner will realize that the fast etching process of the invention is totally unlike the processes found in the prior art and that is patentable. The application is believed to be in condition for allowance, and a formal drawing will be submitted during the term set for payment of the issue fee.

The Commissioner is authorized to charge any fees required in this matter, including extension fees, to Deposit Account 50-2319, Order No. A-70178/ESW.

Respectfully submitted,


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